Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Please cancel Claims 1 to 20, without prejudice, and add the following claims:

1.-20. (Deleted)

21. (New) Nanocomposite materials photoluminescent at ambient temperature produced by a sol-gel process comprising:

- preparing an aqueous or hydroalcoholic mixture containing a silicon alkoxide, an additional component A, and an acidic catalyst, wherein the molar ratio between water molecules and silicon atoms is equal to or higher than 4;

- causing the mixture to gel thereby obtaining a wet gel;

- causing said wet gel to dry; and

- densifing the thus obtained dry gel by means of a thermal treatment having a maximum temperature from 1200°C to 1400°C; where

- the additional component A is a dialkyldialkoxysilane, R_2-Si-$(OR')_2$, or an alkyltrialkoxysilane, R-Si-$(OR')_3$, wherein R and R' radicals are not aromatic; and

- in the range from 300°C to 800 °C the thermal treatment is carried out under an atmosphere made up of pure HCl or a mixture containing at least 5% by volume of HCl in an inert gas, said atmosphere being anhydrous and not containing oxygen.

22. (New) The nanocomposite materials according to Claim 21 wherein the silicon alkoxide is tetramethoxysilane or tetraethoxysilane.

23. (New) The nanocomposite materials according to Claim 21 wherein the acidic catalyst is HCl.

24. (New) The nanocomposite materials according to Claim 21 wherein the –R groups of the additional component A are selected from the group consisting of methyl, ethyl, propyl and butyl, and the –OR groups of the additional component A are selected from the group consisting of methoxy, ethoxy, propoxy and butoxy.

25. (New) The nanocomposite materials according to Claim 24 wherein the additional component A is selected from the group consisting of methyltrimethoxysilane and methyltriethoxysilane.

26. (New) The nanocomposite materials according to Claim 21 wherein the molar ratio between the silicon alkoxide and the additional component A is from 1.86 to 999.

27. (New) The nanocomposite materials according to Claim 26 wherein said molar ratio is from 2.33 to 9.

28. (New) The nanocomposite materials according to Claim 21 wherein pyrogenic silica is present.

29. (New) The nanocomposite materials according to Claim 21 wherein gelation is obtained by raising the pH of the mixture.

30. (New) The nanocomposite materials according to Claim 29 wherein raising the pH of the mixture is realized by adding a solution of ammonia.

31. (New) The nanocomposite materials according to Claim 21 wherein sol gelation is obtained by raising the temperature to a value in the range of 40°C to 60°C.

32. (New) The nanocomposite materials according to Claim 21 wherein drying of the wet gel is obtained by evaporation of liquid in pores of the gel.

33. (New) The nanocomposite materials according to Claim 21 wherein drying of the wet gel is obtained by supercritical extraction of liquid in pores of the gel.

34. (New) The nanocomposite materials according to Claim 23 wherein, before the supercritical extraction, the wet gel is subjected to an operation of exchange of liquid in pores of the gel.

35. (New) The nanocomposite materials according to Claim 21 wherein the sol is deposited in form of a thin layer on a substrate by immersing the substrate in the sol and then extracting the substrate from the sol.

36. (New) The nanocomposite materials according to Claim 21 wherein the sol is deposited in form of a thin layer on a substrate by depositing a drop of the sol on the substrate and rotating the substrate at high speed.

37. (New) Supported thin layers of nanocomposite materials photoluminescent at ambient temperature produced by

- preparing an aqueous or hydroalcoholic mixture containing a silicon alkoxide, an additional component A, and an acidic catalyst, wherein the molar ratio between water molecules and silicon atoms is equal to or higher than 4;

- causing the mixture to gel thereby obtaining a wet gel;

- causing said wet gel to dry; and

- densifing the thus obtained dry gel by means of a thermal treatment having a maximum temperature from 1200°C to 1400°C; where

- the additional component A is a dialkyldialkoxysilane, R_2-Si-(OR')$_2$, or an alkyltrialkoxysilane, R-Si-(OR')$_3$, wherein R and R' radicals are not aromatic; and

- in the range from 300°C to 800 °C the thermal treatment is carried out under an atmosphere made up of pure HCl or a mixture containing at least 5% by volume of HCl in an inert gas, said atmosphere being anhydrous and not containing oxygen,

wherein the sol is deposited in form of a thin layer on a substrate by immersing the substrate in the sol and then extracting the substrate from the sol.

38. (New) Supported thin layers of nanocomposite materials photoluminescent at ambient temperature produced by

- preparing an aqueous or hydroalcoholic mixture containing a silicon alkoxide, an additional component A, and an acidic catalyst, wherein the molar ratio between water molecules and silicon atoms is equal to or higher than 4;

- causing the mixture to gel thereby obtaining a wet gel;

- causing said wet gel to dry; and

- densifing the thus obtained dry gel by means of a thermal treatment having a maximum temperature from 1200°C to 1400°C; where

- the additional component A is a dialkyldialkoxysilane, R_2-Si-$(OR')_2$, or an alkyltrialkoxysilane, R-Si-$(OR')_3$, wherein R and R' radicals are not aromatic; and

- in the range from 300°C to 800°C the thermal treatment is carried out under an atmosphere made up of pure HCl or a mixture containing at least 5% by volume of HCl in an inert gas, said atmosphere being anhydrous and not containing oxygen,

wherein the sol is deposited in form of a thin layer on a substrate by depositing a drop of the sol on the substrate and rotating the substrate at high speed.